ECONOMIC IMPACT ANALYSIS

An Extension Community Economics Program

The Economic Impact of Investments in the Intrinsic Qualities of the Paul Bunyan and Lake Country Scenic Byways

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In Partnership with:

The University of Minnesota Tourism Center

Sponsored by:

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Paul Bunyan Scenic Byway
Lake Country Scenic Byway

Background

This report is the result of collaboration between University of Minnesota Extension and the University of Minnesota Tourism Center. In 2009, the Paul Bunyan Scenic Byway and the Lake County Scenic Byway, both in Minnesota, received funding from the Central Regional Sustainable Development Partnership and the University Carlson Chair for Travel and Tourism to conduct a study of the economic impact of the two scenic byways. After discussion, it was determined the most appropriate approach to this study would be to divide it into two segments. The two goals of the first segment are: 1) to quantify the economic impact of byway spending on development, maintenance, and promotion of the intrinsic qualities of the byway, 2) to collect and analyze available information, in the form of a literature review, on methods and processes used in scenic byway economic impact studies. The main goal of the second segment is to measure and quantify the economic impact created by byway tourists.

The following study reports the economic impact of byway investments to maintain, develop and promote the intrinsic qualities of the byway. The main researcher on this study is Brigid Tuck, analyst/writer for the University of Minnesota Extension Center for Community Vitality. This analysis could not have been completed without the assistance of: Linda Ulland, Central Sustainable Development Partnership, Ingrid Schneider, University of Minnesota Tourism Center, Lynn Scharenbroich, Paul Bunyan Scenic Byway, and Katharine Magozzi, Lake Country Scenic Byway.

Introduction

In 1991, Congress established the National Scenic Byways program. Roads and highways in the United States can be designated as a National Scenic Byway if they seek to preserve, maintain, develop, interpret, and promote one of six established intrinsic qualities. These intrinsic qualities are: scenic, natural, historic, cultural, archaeological, and recreational. The National Scenic Byways program is administered by the Federal Highway Administration. Roads and highways can also be designated by individual states to receive state recognition as a scenic byway. Most nationally-designated byways began with state designation.

Individual scenic byways are managed and operated by volunteer organizations. These organizations work to preserve, maintain, develop, interpret and promote the core intrinsic quality that the byway possesses. Byway organizations engage in a variety of activities and utilize various funding sources to accomplish their goals relating to the intrinsic quality. These activities can be categorized into three groups: 1) activities designed for planning, 2) activities that create new infrastructure on/near the byway, and 3) activities that promote and/or market the byway.

Byways, to achieve designation, are required to prepare a corridor management plan which should “provide for the conservation and enhancement of the byway's intrinsic qualities as well as the promotion of tourism and economic development" (National Scenic Byways Program Interim Policy, Government Printing Office). The plan needs to include information on the physical location of the byway, a strategy for maintaining and enhancing the intrinsic quality, a strategy for protecting the intrinsic quality during growth and change on the byway, the identification of any safety issues on the byway, a signage plan to mark the byway, and a strategy for marketing the byway. Byways can also prepare an interpretive plan to assist in planning and marketing the byway.

Once designation is granted, byways can access funding from the Federal Highway Administration and from state departments of transportation to build and improve physical infrastructure on and or near the byway. These infrastructure improvements include projects like implementing new signs, developing walking trails, and building interpretative centers. Funding for these projects can be received from federal and state governments; often with a local match raised by the byway organization.

Scenic byway organizations also are active in promotion and marketing of the byway. Funding for marketing and promotion can be received from federal, state, and local governments, however, often byway organizations work with local businesses, Chambers of Commerce, Convention and Visitor’s Bureaus, and other local organizations to raise funds for marketing and promotion. Many projects are conducted with in-kind donations from businesses, civic

organizations, and local governments. Byway organizations also generate some revenue by selling products or hosting events.

Through these activities, scenic byways create an economic impact in their local communities. Most economic impact studies of scenic byways focus entirely on the economic impact created by tourists. Tourists do, of course, generate significant economic activity. However, focusing only on their contribution ignores the important contributions that byway organizations themselves make to their local communities. The goal of this report is to examine how two Minnesota scenic byways create economic activity in their communities. The byways to be studied are the Paul Bunyan Scenic Byway and the Lake Country Scenic Byway. This report will detail how byway investments made towards their intrinsic quality create economic impact in the byway communities.

Since scenic byways receive federal, state, and local governmental funding and rely on local businesses and organizations for donations, it is not surprising that byways are often asked to document the economic impact they are having on the local community. Tourists, drawn to the area by the byway, obviously have a significant impact on the local community. However, the hard work and efforts by the scenic byway organizations also have an economic impact. Quantifying the economic impact of the investments related to the intrinsic quality of the byway can be done in two steps. The first step is to determine how many dollars were spent by the byway to maintain, preserve, interpret, and promote their intrinsic quality. The second step is to use an input-output model to measure how this spending affects the local economy.

The first step of this economic impact analysis was done by the byway organizations themselves. The byways were asked to submit a list of investments made each year since the byway received designation. The byways were instructed to submit a list of the projects, the total dollars spent on each project, the total dollars spent locally for each project, and a short description of each project. These reports were submitted to the analyst on this project.

The analyst then took the list of projects and prepared them for entry into input-output software. Input-output models trace the flow of goods and services throughout the economy. An input-output model can predict how a single dollar spent on any commodity will move through the economy, including how much leaks out of the local economy and how much remains in the economy. Dollars that remain in the economy create a ripple effect. For example, if a local contractor is hired to build a new structure, he or she will have to buy wood. If the wood is purchased locally, the lumberyard will have to increase it supplies and so forth. The local contractor will also have to hire laborers to assist in the construction. These people will receive additional money in their paycheck. If they buy more groceries at the local store, then the local grocer will have to increase his or her supplies, and so forth. Input-output models can capture and

quantify these “ripples” called indirect and induced effects. The indirect and induced effects can be added to the initial investment (the direct effect) to measure the total effect of building the new structure. The input-output model used in this analysis is IMPLAN (IMpact Analysis for PLANning, Minnesota IMPLAN Group). The projects were entered into the IMPLAN software by year and the economic impact for each year was calculated.

Economic impact can be measured and reported by three metrics. The first is output. Output refers to total *sales* of goods and services. In this report, all output figures are reported in 2009 dollars. Output is measured in dollars and is equivalent to total sales. For example, the statement “output in the agricultural industry equaled $1 million in 2007” can be interpreted “total sales in the agricultural industry were $1 million in 2007”. The output measure can include significant double counting. For example, think of corn. The value of the corn is counted when it is sold to the mill, again when it is sold to the dairy farmer, again as part of the price of fluid milk, and then yet again when it is sold as cheese. The value of the corn is built into the price of each of these items and then the sales of each of these items are added up to get total sales (or output). Employment includes full and part time workers and is measured in annual average jobs. Total wage and salaried employees as well as the self-employed are included in employment estimates in IMPLAN. Therefore, a statement that says “employment will increase by 15 jobs” means that a mix of 15 full and part time jobs will be created. Because employment is measured in jobs and not in dollar values, it tends to a very stable metric. Finally, labor income measures the value that is added to the product by the labor component. For example, in our corn example, when the corn is sold, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to the dairy farmer it includes in the price some markup for its labor costs. When the dairy farmer sells the milk to the cheese manufacturer, he/she includes a value for his/her labor. These individual value increments for labor can be measured. This is labor income. Labor income does not include double counting. In this report, labor income will be reported in 2009 dollars. Each of these metrics has its own strengths and weaknesses; therefore, this report will include all three.

Economic Impact of the Paul Bunyan Scenic Byway

The Paul Bunyan Scenic Byway is a 54-mile loop through the Brainerd Lakes area of northern Minnesota. The byway’s spine is County State Aid Highway 16. The route goes both north around the Whitefish Chain of Lakes and south along Pelican Lake. Fourteen local government jurisdictions are included in the byway route: Jenkins, Ideal Township, Crosslake, Manhattan Beach, Mission Township, Pelican Township, Timothy Township, Pequot Lakes, Breezy Point, Pine River, Jenkins Township, Gail Lake Township, Wilson Township, and Barclay Township.

The impetus for the byway began in 1995. Ideal Township became concerned about the safety of bicyclists along the shoulders of County State Aid Highway (CSAH) 16. The township wanted to raise funding to pave the shoulders of CSAH 16. A regional representative of the Minnesota Office of Tourism suggested that the road may qualify as a scenic byway under a new Minnesota state program. This designation could potentially help raise the priority of the shoulder paving project. A small group of local residents worked to apply for designation and the byway was accepted into the program in June of 1998. As a result, the shoulders of CSAH 16 were paved and completed in August of 2002. Since then, the byway has gone on to receive designation as a National Scenic Byway. Many projects have been completed during the eleven year history of the Paul Bunyan Scenic Byway.

The economic impact of investments by the Paul Bunyan Scenic Byway on the output of the local economy[1] is shown in table 1. In each year since 2000, the Paul Bunyan Scenic Byway has made investments related to its intrinsic qualities. Direct spending (column two) is equal to the amount of money the byways spent on projects in that year (adjusted to 2009 dollars). The indirect/induced column measures how much additional spending was spurred in the local economy due to the byway's initial spending. The direct, indirect and induced impacts are summed to give the total impact.

Table 1: Economic Impact of Paul Bunyan Scenic Byway Investments to Preserve Intrinsic Qualities, Output (2009 dollars)

Year	Direct	Indirect/Induced	Total
2000	53,382	28,525	81,907
2001	48,923	26,155	75,078
2002	24,004	11,201	35,205
2003	103,676	50,910	154,586
2004	33,179	17,612	50,791
2005	9,888	4,649	14,537
2006	10,860	5,290	16,150
2007	28,882	14,614	43,496
2008	50,443	27,786	78,229
2009	53,776	27,359	81,135
Total	417,013	214,101	631,114

Overall, in the ten years since the byway has been making investments, the Paul Bunyan Scenic Byway has generated $631,114 of economic activity in the local economy with $417,013 of direct spending. Byway spending ranged from a low of $9,888 in 2005 to a high of $103,676 in 2003. While spending has varied over time, the byway has consistently contributed positively to the local economy. The byway has helped to leverage funding for physical infrastructure projects like the Gateway Gazebo, the Veterans and Chiarella Walking Trails, the Footbridge

[1] Cass and Crow Wing counties.

over Hay Creek, the Wetlands Walk, Interpretive Panels and the Paul Bunyan Footprints. The Paul Bunyan Scenic Byway has also undertaken unique marketing efforts like a webisode on "Paul and Babe's Favorite Sites Along the Paul Bunyan Scenic Byway" and Historic Mail Carrier Live Performances. All the projects were fulfilled primarily by local contractors.

The economic impact of Paul Bunyan Scenic Byway investments on employment in the local economy is illustrated in table 2. In the ten year history of the byway, spending by the byway has helped to create 7 jobs in the local economy.

Table 2: Economic Impact of Paul Bunyan Scenic Byway Investments to Preserve Intrinsic Qualities, Employment

Year	Direct	Indirect/Induced	Total
2000	0.4	0.3	0.7
2001	0.3	0.3	0.6
2002	0.2	0.1	0.3
2003	0.8	0.6	1.4
2004	0.3	0.1	0.4
2005	0.1	0.0	0.1
2006	0.1	0.1	0.2
2007	1.1	0.2	1.3
2008	1.3	0.3	1.6
2009	0.3	0.3	0.6
Total	4.9	2.3	7.2

These numbers are artificially low because input-output models cannot capture two unique aspects of scenic byways. First, byways are largely run by volunteers. There is very little paid labor associated with byways and therefore, direct employment is low. This table does not account for the hours of work done by byway volunteers. Second, byways often receive donations of in-kind services for work done on byway projects. For example, in the design and installation of the Footbridge over Hay Creek, the county provided in-kind services. The value of the labor donated by the county is not included in these economic impacts.

The economic impact of the Paul Bunyan Scenic Byway investments on labor income in the local economy is illustrated in table 3. The Paul Bunyan Scenic Byway has generated a total of $271,733 of labor income in the local economy during the ten years it has been making investments. Again, the economic impact of the projects by the byway do not include estimates of the value of the time put into the projects by the byway volunteers. Quantifying that effort would significantly increase the impact of the byway projects.

Table 3: Economic Impact of Paul Bunyan Scenic Byway Investments to Preserve Intrinsic Qualities, Labor Income (2009 dollars)			
Year	**Direct**	**Indirect/Induced**	**Total**
2000	30,473	9,144	39.617
2001	27,418	8,404	35,822
2002	8,678	3,735	12,413
2003	46,399	16,821	63,220
2004	18,905	5,599	24,504
2005	4,416	1,448	5,864
2006	4,911	1,718	6,629
2007	11,648	4,557	16,205
2008	25,829	8,598	34,427
2009	24,109	8,923	33,032
Total	202,786	68,947	271,733

The Paul Bunyan Scenic Byway has been making investments related to the byways in its local communities for ten years, During that time, the byway has contributed a total of $631,000 in output, 7 jobs, and $271,700 in labor income to those local communities.

Economic Impact of the Lake Country Scenic Byway

The Lake Country Scenic Byway is an 88-mile route across northern Minnesota. The byway runs from Detroit Lakes east to Park Rapids and on to Walker. A spur of the byway runs north from Park Rapids to Itasca State Park, home of the Headwaters of the Mississippi. Besides Itasca State Park, the route also provides access to Tamarac National Wildlife Refuge, Chippewa National Forest, five state parks, two paved state bike trails and the North Country Scenic Trail. The byway received state designation in 1999 and is currently working on national designation.

Many projects have been completed by the Lake Country Scenic Byway in its ten year history. These projects have helped to create the byway community. They have also added to the local economy. While spending by tourists, drawn to the area by the byway, constitutes a significant amount of the impact of the byway, investments by the byway organization also contribute to the economic impact of byways.

Table 4 shows the economic impact of the Lake Country Scenic Byway on total output in the local economy.[2] The Lake Country Scenic Byway made its first substantial investments in 2001. Between 2001 and 2008, the byway organization spent $327,130 on projects in the local economy. As a result, $477,385 worth of sales were generated in the byway communities. While the

[2] Becker, Cass and Hubbard counties.

impact of the byway has fluctuated from a high of near $130,000 in 2005 to a low of $6,000 in 2007, the byway has consistently contributed positively to the overall economy of the area. In the early 2000s, the byway undertook a marketing campaign. A marketing plan, logo, branding, and vision statement were created. The University of Minnesota delivered the "At Your Service" program to help train local workers to be more customer-orientated. A byway map and video were created to market the area. Each fall, the byway organizes and markets a fall color tour of the Lake Country Scenic Byway. A local tour bus provider takes interested tourists around to local businesses, restaurants, theatres, and other attractions. Each attendee pays a small fee to cover the cost of the tour.

Table 4: Economic Impact of Lake Country Scenic Byway Investments to Preserve Intrinsic Qualities, Output (2009 dollars)

Year	Direct	Indirect/Induced	Total
2001	49,311	24,052	73,363
2002	35,629	13,694	49,323
2003	67,723	32,603	100,326
2004	28,464	14,215	42,679
2005	90,921	38,725	129,646
2006	5,683	2,432	8,115
2007	4,501	1,946	6,447
2008	44,898	22,588	67,486
Total	327,130	150,255	477,385

The Lake Country Scenic Byway also has an impact on employment in the local economy. From 2001 to 2008, Lake Country Scenic Byway investments created 5 jobs in the local economy (see table 5). This employment total does not measure total effort on behalf of the byway, however. The byway is mostly a volunteer-driven organization. These employment totals do not include a measure of the amount of time and effort devoted to the byway by its volunteers. The byway also receives many in-kind donations of labor that are not included in these totals. For example, the byway received funding to create signs welcoming byway visitors to each of the communities located along the byway. While the sign faces received funding from a federal grant and local match dollars, each community was required to pay for the installation of the sign bases. The sign bases are made of concrete with a stone front which were built by a local stonemason. In Detroit Lakes, the city donated labor for the concrete base and installed the lighting with in-kind donations.

Table 5: Economic Impact of Lake Country Scenic Byway Investments to Preserve Intrinsic Qualities, Employment			
Year	**Direct**	**Indirect/Induced**	**Total**
2001	0.4	0.3	0.7
2002	0.4	0.2	0.6
2003	0.6	0.4	1.0
2004	0.3	0.2	0.5
2005	0.9	0.4	1.3
2006	0.1	0.0	0.1
2007	0.1	0.0	0.1
2008	0.4	0.3	0.7
Total	3.2	1.8	5.0

Finally, the Lake Country Scenic Byway creates labor income in the local economy. Labor income is payments to both wage earners and self-employed individuals for the labor they have contributed. As with output and employment, in-kind and volunteer labor are not given a value in IMPLAN and therefore are not part of the totals. As shown in table 6, during the period of 2001 to 2008, the Lake Country Scenic Byway generated $181,000 worth of labor income in the local economy. The byway directly spent $135,578 for labor on its projects which translated into $181,000 of labor payments in the economy.

Table 6: Economic Impact of Lake Country Scenic Byway Investments to Preserve Intrinsic Qualities, Labor Income (2009 dollars)			
Year	**Direct**	**Indirect/Induced**	**Total**
2001	26,379	8,078	34,457
2002	9,826	4,589	14,415
2003	27,507	9,541	37,048
2004	13,527	4,176	17,703
2005	33,354	11,531	44,885
2006	1,834	729	2,563
2007	1,531	573	2,104
2008	21,620	6,649	28,269
Total	135,578	45,866	181,444

Conclusions

Both the Paul Bunyan Scenic Byway and the Lake Country Scenic Byway have provided economic stimulus in their respective local economies. Over a ten year period of investments, the Paul Bunyan Scenic Byway has generated $631,000 of output, created 7 jobs, and contributed $271,000 of labor income to the local economy. Lake Country Scenic Byway, in nine years, has generated $477,000 of output, created 5 jobs and contributed $181,000 of labor income to the local economy. These figures include only the value of output, employment, and labor income that were given monetary reimbursement. Many valuable hours of labor

and physical inputs were also donated to the byways by local governments, local businesses, and other organizations.

These economic impact figures do not constitute the entire economic impact of the byways. The scenic byways also attract tourists to the area. The spending by these tourists makes a significant impact in the local economy and must be included in order to measure the total economic impact of the scenic byways. It can be expected that the economic impact of the byway tourists will be a much larger impact. An analysis of tourists and the scenic byways are recommended for future study.

These figures also focus only on the economic impact of the byways. The byways contribute valuable impacts to the region far beyond economics. Activities undertaken by the byways, such as trail creation, signage, and planning efforts increase and improve the social and cultural environment around the byways. These improvements have significant impacts on the local communities that cannot be adequately defined by economic impact analysis.

Appendix: Methodology

This study was completed using economic impact analysis methodology. Economic impact analysis predicts how an initial change due to an economic event will affect the entire economy. These studies can look at a wide range of economic events that either increase or decrease economic activity. A new business opening, a new government policy, or an increase in demand are examples of economic events that may increase economic activity. A business closing, layoffs, or a negative weather event are examples of economic events that may decrease economic activity.

For example, consider the local hospital. If demand for its product, here medical services, were to increase, then the hospital would correspondingly increase its production, measured as services. To increase its production, the hospital would have to do a series of things. First, the hospital would have to purchase more supplies. These supplies might be bandages, electricity, laundry cleaning services, and so forth. As the hospital increases its demand to its suppliers, the suppliers then have to increase their production. If the hospital buys more bandages, then the bandage manufacturer has to make more bandages and it demands more of its suppliers to accomplish this. Consequently, the suppliers to the bandage manufacturer have to increase their supplies. This process continues on through the economy. A "ripple" effect started by the initial increase in production occurs in the economy as these increases in production continue. The sum of the ripple effects related to an increased demand for supplies is called the "indirect" effect. Second, the hospital and its suppliers would need to purchase more labor. In order to treat more patients, the hospital needs to hire more doctors, nurses, and other employees. This means the hospital is paying more in wages. A newly hired nurse will take his/her paycheck and spend it on groceries, utilities, housing, and so forth. When his/her spending increases sales at the local grocery store, then the grocer must increase his or her production causing another wave of "ripples" in the economy. The sum of ripples associated with employee spending is called the "induced" effect. The initial effect plus the indirect and induced are then added together to calculate the total effect.

Special economic models, called input-output models, were developed to capture and quantify these "ripples". There are several input-output models available. One particular input-output model is called IMPLAN (IMpact Analysis for PLANning, Minnesota IMPLAN Group). IMPLAN is widely used by economists for economic impact analysis because it: can measure output and employment impacts; is available on a county-by-county basis; and it is flexible for the user. Due to these reasons, the IMPLAN model was used for this analysis. IMPLAN has some limitations and qualifications, but it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool, its definitions, and its limitations will help ensure the best results from the model.

One of the most critical aspects of understanding impact analysis is the distinction between the "local" and "non-local" economy. The local economy is defined as part of the model building process. The local economy, also known as the study area, can be defined by either the group requesting the study or by the analyst. Typically, the study area is a county or a group of counties that share economic linkages. Once the study area is determined it becomes internalized into the model and becomes the local economy. At this point, it becomes essential to separate "local" expenditures from "non-local" expenditures. Only expenditures that are made locally can trigger a ripple effect in the local economy (which is what is being measured). Expenditures on items purchased outside the region will cause a ripple effect, but not in the local economy, therefore, it is not measured. To clarify, think of your household expenditures. You might spend a fraction of it locally, perhaps at the local hair salon or the local diner. These expenditures will then cause a local ripple as the places employ local residents and purchase some of their goods locally. However, you probably spend a significant fraction of your income outside of your local community. Your telephone and cable bills likely go to a company outside of the region. Your mortgage payment may go to a bank out-of-state. These expenditures do not go to employ local residents and it is unlikely these companies purchase supplies from your local stores. Therefore, there is no direct effect associated with these expenditures and consequently no ripple effect. It is important to distinguish in the IMPLAN modeling process which expenditures occur locally and which do not. As you read this report, note the discussions on how local expenditures were determined.

There is another aspect to the local versus non-local debate. As the direct expenditure (or impact) moves through the community, more and more of it will leave the model. These are leakages that occur as each round of spending has some money being expended outside the local economy.

There are a few definitions that are essential to understand in order to properly read the results of an IMPLAN analysis. IMPLAN uses the terms output, employment, and labor income. Output is measured in dollars and is equivalent to total sales. For example, the statement "output in the agricultural industry equaled $1 million in 2007" can be interpreted "total sales in the agricultural industry were $1 million in 2007". The output measure can include significant double counting. For example, think of corn. The value of the corn is counted when it is sold to the mill, again when it is sold to the dairy farmer, again as part of the price of fluid milk, and then yet again when it is sold as cheese. The value of the corn is built into the price of each of these items and then the sales of each of these items are added up to get total sales (or output). Employment includes full and part time workers and is measured in annual average jobs. Total wage and salaried employees as well as the self-employed are included in employment estimates in IMPLAN. Therefore, a statement that says "employment will increase by 15 jobs" means that a mix of 15 full and part time jobs will be created. Because employment is measured in jobs and not in dollar values, it

tends to a very stable metric. Finally, labor income measures the value that is added to the product by the labor component. For example, in our corn example, when the corn is sold, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to the dairy farmer it includes in the price some markup for its labor costs. When the dairy farmer sells the milk to the cheese manufacturer, he/she includes a value for his/her labor. These individual value increments for labor can be measured. This is labor income. Labor income does not include double counting. Each of these metrics has its own strengths and weaknesses; therefore, this report will include all three.

Here is a final review of the IMPLAN terminology and how it will be used in this report. The analysis will show the affect of a direct impact on output, employment, and labor income in the study area. The direct impact is equivalent to the money spent locally by the scenic byway. This will create a ripple effect in the economy. The ripples that are related to spending for supplies and inputs are indirect effects. The ripples that are related to spending by labor as a household are the induced effects. The indirect and induced effects are additional impacts that exist solely because the direct impact occurred. The direct, indirect, and induced can be added together and are reported as the total effect.